

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A reagent delivery system in an apparatus for processing biological samples arranged on carrier elements, the apparatus comprising a ~~stationary~~-reagent section having one or more reagent containers and a ~~stationary~~-staining section in which at least one carrier element is arranged, ~~characterized by comprising:~~
 - a probe for aspirating a portion of reagent from a reagent container in order to dispense a predetermined amount on a predetermined carrier element; and
 - a probe handling device for handling the probe,
 - wherein the probe comprises a continuous probe tubing (101) extending through a rigid probe member (102) and providing fluid communication from a dispensing end (104) of said probe member to a pneumatic pressure regulation device and wherein the rigid probe member is adapted for cooperation with the closure of the reagent container.
2. (Currently amended) A reagent delivery system according to claim 1, wherein the rigid probe member is arranged to cooperate with at least one reagent container in such manner that the probe may penetrate an opening covered by a septum, aspirate reagent, and withdraw from the container, and wherein the septum is adapted so as to regenerate as an almost tight closure of the reagent container, i.e. become substantially closed again after withdrawal.
3. (Currently amended) A reagent delivery system according to claim 2, wherein the septum comprises a plurality of sectors or flaps[[,]] which are free to flex upwards or downwards ~~thereby allowing the aspirating end of the probe to penetrate the closure and the closure to regain a closed form after retraction of the probe.~~
4. (Currently amended) A reagent delivery system according to claim 2, wherein the septum comprises a plurality of sectors or flaps, which, originally, are connected by lines of weakness such that the lines of weakness will break the first time a probe is inserted into the reagent container, and, afterwards, are free to flex upwards or downwards ~~thereby allowing~~

~~the aspirating end of the probe to penetrate the closure and the closure to regain a closed form after retraction of the probe.~~

5. (Currently amended) A reagent delivery system according to ~~either one of claim~~[[s]] 1 ~~or 2~~, wherein the dispensing end of the probe ~~is comprises a cone-conical shape in order to facilitate the penetration through the septum in the closure of the reagent container.~~
6. (Currently amended) A reagent delivery system according to claim 1, further characterized comprising :
 - an identification on ~~in that~~ a reagent container;
 - ~~is provided with an identification, and that~~ a sensor element on the probe handling device ~~comprises a robotic device also comprising a sensor element that is~~ able to acquire information from the identification ~~on the reagent container;~~; and
 - ~~wherein the robotic device is connected to a computer~~ electrically coupled to the sensor element and receiving the acquired information.
7. (Currently amended) A staining apparatus for automated processing of biological samples arranged on carrier elements, ~~characterized by comprising:~~
 - a reagent section comprising one or more reagent containers;
 - a staining section in which at least one carrier element is arranged;
 - a reagent dispensing device for dispensing a portion of reagent onto a predetermined carrier element; and
 - a handling device for handling said reagent dispensing device,

wherein the reagent dispensing device comprises a continuous probe tubing extending through a rigid probe member and providing fluid communication from a dispensing end of said probe member to a pneumatic pressure regulation device.
8. (Currently amended) A staining apparatus according to claim 7, wherein the pneumatic pressure regulation device ~~include~~ includes a vacuum source with which the tubing may communicate via a valve device.

9. (Currently amended) A staining apparatus according to claim 8, wherein said valve device ~~are~~is operable to provide a predetermined pressure in the tubing for aspirating or dispensing a predetermined amount of reagent in the dispensing end of the tubing.
10. (Currently amended) A staining apparatus according to ~~any of the claims 7-9~~claim 7, wherein the handling device comprises:
 - a holder for holding the probe member; and
 - a robotic motion system for moving the reagent dispensing device between predetermined locations relative to the carrier element and the reagent containers.
11. (Currently amended) A staining apparatus according to ~~any of the claim[[s]] 7 to 10~~, wherein the internal diameter of the tubing is between 1.0 mm and 2.0 mm, ~~preferably between 1.2 mm and 1.8 mm and more preferably between 1.4 mm and 1.6 mm, such as about 1.5 mm (1/16 inch)~~
12. (Currently amended) A staining apparatus according to ~~any of the claim[[s]] 7 to 11~~, wherein the length of the tubing is between 0.5 m and 2.5 m, ~~preferably between 1.0 m and 2.0 m and more preferably between 1.3 m and 1.7 m, such as about 1.5 m.~~
13. (Currently amended) A staining apparatus according to ~~any of claim[[s]] 7 to 12~~, wherein the continuous tubing is provided with a spirally wound probe tubing section.
14. (Original) A staining apparatus according to claim 13, wherein the spirally wound probe tubing section is a coiled section.
15. (Currently amended) A staining apparatus according to claim 14, wherein the coiled section comprises ~~at least one winding, and preferably between 5 and 30 windings, more preferably between 10 and 25 windings, and most preferably between 15 and 22 windings, such as 20 windings.~~

16. (Currently amended) A staining apparatus according to ~~any of claim~~[[s]] ~~7 to 12~~, further including a washing station for cleaning the reagent-dispensing device.
17. (Currently amended) A staining apparatus according to ~~either one of claim~~[[s]] ~~8 or 16~~, wherein said valve device ~~are~~is adapted to provide a connection to a fluid source providing a wash solution or cleaning fluid for washing and or rinsing the probe tubing.
18. (Currently amended) A staining apparatus according to ~~either one of claim~~[[s]] ~~14 or 16~~, wherein the washing station comprises:
a receptacle (~~wash sump~~) able to accommodate a substantial portion of the dispensing end of the ~~probe~~probe; and
an outlet to waste.
19. (Original) A staining apparatus according to claim 18 wherein the outlet to the waste is located a distance above the bottom of the receptacle so that the wash fluid ejected from the dispensing end of the probe will wash the outer surface of the dispensing end of the probe before the wash fluid is drained to waste.
20. (Currently amended) A staining apparatus according to ~~any of the claim~~[[s]] ~~17 to 19~~, wherein said washing fluid ~~are~~is selectable from a plurality of fluids according to the tube cleaning requirements.
21. (Currently amended) A staining apparatus according to ~~any of the claim~~[[s]] ~~7 to 12 or 16-20~~, wherein the reagent section comprises a ~~reagent rack providing a plurality of~~ compartment[[s]] for a ~~plurality of reagent container~~[[s]] ~~or container assemblies and~~ wherein the cross-section of ~~a the~~ compartment cooperates with the cross-section of the container ~~or container assembly~~.

22. (Currently amended) A staining apparatus according to claim 21, wherein the cross-section is an unsymmetrical polygon, ~~such as a rectangle, with one corner section replaced by a slanted/oblique fifth side.~~
23. (Currently amended) A staining apparatus according to claim 22, wherein a top wall of a reagent container is provided with a label comprising identifying information ~~identifying e.g. type of reagent, container volume size, date of delivery, date of end of use,~~ and wherein the robot head further comprises an optical sensor, able to provide the information on the label to a computer system.
24. (Currently amended) A staining apparatus according to claim ~~[[22]]~~ 7, wherein an electrically conducting member of the reagent dispensing device is connected to an electronic circuit adapted for capacitive level sensing.
25. (Original) A staining apparatus according to claim 22, wherein the computer system will issue an order for a new delivery of the reagent if the level is below a predetermined limit.
26. (Currently amended) A staining apparatus according to claim ~~22~~23, wherein the computer system is connected to a plurality of staining apparatuses,
wherein the computer system uses the reagent dispensing device to detect the level of reagent fluid in each reagent container,
wherein the computer system ~~is arranged to let the robotic system with the level sensor and the optical sensor update~~maintains information about the available amount of reagent in the reagent containers in the plurality of staining apparatuses ~~before starting a staining procedure,~~ and
wherein the computer system ~~is arranged to recommend to an operator that a tissue slide requiring a specific reagent, be processed in a staining apparatus having a reagent container comprising the necessary volume of such specific reagent.~~

27. (Currently amended) A reagent dispensing device for use in a staining apparatus for processing of biological samples arranged on carrier elements, said device ~~characterized by~~ comprising:
- a probe member having an aspirating and dispensing end, through which reagent may be aspirated and dispensed, ~~and a mounting end~~; and
 - a continuous probe tubing provided inside the probe member, said tubing extending from the aspirating and dispensing end through the entire probe member to a pneumatic pressure regulation device.
28. (Currently amended) A reagent dispensing device according to claim 27, wherein the internal diameter of the tubing is between 1.0 mm and 2.0 mm, ~~preferably between 1.2 mm and 1.8 mm and more preferably between 1.4 mm and 1.6 mm, such as about 1.5 mm (1/16 inch).~~
29. (Currently amended) A reagent dispensing device according to claim 27 ~~or 28~~, wherein the length of the tubing is between 0.5 m and 2.5 m, ~~preferably between 1.0 m and 2.0 m and more preferably between 1.3 m and 1.7 m, such as about 1.5 m.~~
30. (Currently amended) A reagent dispensing device according to ~~any of the claim~~[[s]] 27 ~~to 29~~, wherein the continuous tubing is provided with a spirally wound probe tubing section.
31. (Original) A reagent dispensing device according to claim 30, wherein the spirally wound probe tubing section is a coiled section.
32. (Currently amended) A reagent dispensing device according to claim 31, wherein the coiled section comprises ~~at least one winding, preferably between 5 and 30 windings, more preferably between 10 and 25 windings, and most preferably between 15 and 22 windings, such as 20 windings.~~
33. (Currently amended) A reagent dispensing device according to ~~any of claim~~[[s]] 27 ~~to 32~~, wherein ~~the a~~ mounting end of the probe member includes a fitting for mounting the device

~~probe member to a probe holder on a probe handling device, such as a robotic head that is part of a computer controlled robotic system in a staining apparatus.~~

34. (Currently amended) A reagent container for use in a reagent delivery system in an apparatus for processing biological samples arranged on carrier elements, the apparatus comprising a ~~stationary~~ reagent section having one or more reagent containers and a ~~stationary~~ staining section in which at least one carrier element is arranged, the container~~[[,]]~~ ~~characterized in that the~~comprising:

~~a cross-section of the container~~that is a non-symmetrical polygon.

35. (Currently amended) A reagent container according to claim 34, wherein the cross-section of the container is a rectangle with one corner-section replaced by a ~~slanted/oblique~~slanted or oblique fifth side.

36. (Currently amended) A reagent container ~~having a box-like form,~~ comprising:

a bottom ~~wall,~~wall;

four side walls; and

a top wall, ~~and wherein~~ ~~[[on]]~~ one corner section is ~~replac-~~ replaced by a single ~~slanted/oblique~~ slanted or oblique sidewall, ensuring a specified orientation of the container when inserted in a corresponding compartment a reagent container rack, ~~arranged to accommodate a plurality of containers in rows and columns~~ of a biological staining apparatus.

37. (Currently amended) A reagent container assembly for use ~~in a reagent delivery system in an apparatus for processing biological samples arranged on carrier elements, the apparatus comprising a stationary reagent section having one or more reagent containers and a stationary staining section in which at least one carrier element is arranged, the~~ reagent container assembly, ~~characterized by~~ comprising:

~~a covering or shell forming an adapter comprising a covering or shell whose cross section is a non-symmetrical polygon and which is able to accommodate a reagent container;~~
and

~~the reagent container within the adapter, further characterized in that the cross-section of the assembly is a non-symmetrical polygon.~~

38. (Currently amended) A reagent container assembly according to claim 37, wherein the cross-section of the assembly as well as of the reagent container is a rectangle with one corner-section replaced by a ~~slanted/oblique~~slanted or oblique fifth side.

39. (Currently amended) A reagent container assembly according to claim 37, wherein the reagent container comprises a closure comprising a plurality of sectors or flaps[[,]] which are free to flex upwards or downwards thereby allowing ~~the aspirating end of the~~a reagent dispensing device to penetrate the closure and the closure to regain its closed form after retraction of the ~~probe~~reagent dispensing device.

40 - 41. (Cancelled)

42. (Currently amended) A method of aspirating and dispensing reagents on a plurality of samples on carriers (tissue slides) ~~characterised by~~comprising the steps of:

aspirating a ~~plurality of~~first predetermined volume[[s]] of a predetermined reagent into a probe,

further characterised by aspirating a predetermined amount of ~~air-gas~~ into the probe;

aspirating a second predetermined volume of the reagent into the probe between each of the predetermined volumes of a reagent, in such that the gas forms a ~~a manner that every volume of the plurality of volumes is separated from neighbouring volumes by air~~ bubble[[s]] separating the first and second volumes of reagent;

dispensing the second predetermined volume of the reagent from the probe onto a first sample; and

dispensing the first predetermined volume of the reagent from the probe onto a second sample.

43. (Currently amended) A reagent container for an apparatus for processing biological samples, the reagent container ~~characterized by~~ comprising:

a bottle comprising a first internal volume; and

an adapter housing the bottle and having an internal surface and an external surface, the external surface mating with a receptacle of the apparatus in only one orientation of the adapter, the internal surface mating with the bottle in only one orientation of the bottle.

44. (Original) The reagent container of claim 43, wherein a portion of the external surface is identical in size and shape to a second bottle comprising a second internal volume greater than the first internal volume.

45. (Original) The reagent container of claim 43, wherein the internal surface has a projection that mates with a groove on the outer surface of the bottle.

46. (Original) The reagent container of claim 45, wherein the internal surface has a projection that is able to mate with a groove on the outer surface of a third bottle comprising a third internal volume greater than the first internal volume and less than the second internal volume.

47. (Original) The reagent container of claim 43, wherein the internal surface has a groove that mates with a projection on the outer surface of the bottle.

48. (Original) The reagent container of claim 47, wherein the internal surface has a section groove that is able to mate with a projection on the outer surface of a third bottle comprising a third internal volume greater than the first internal volume and less than the second internal volume.

49. (Original) The reagent container of claim 43, wherein the bottle has a top surface comprising:
an aperture for withdrawal of fluid from the bottle; and
an identification providing information relating to the fluid or the bottle.
50. (Original) The reagent container of claim 43, wherein the aperture is covered by a septum.
51. (Original) The reagent container of claim 43, wherein the external surface has side walls in the form of a non-symmetrical polygon.
52. (Original) The reagent container of claim 44, wherein the portion consists of five side walls in the form of a non-symmetrical polygon.
53. (Original) The reagent container of claim 44, wherein the second volume is 50 ml and the first volume is chosen from the group consisting of 1 ml, 2 ml, 5 ml, 10 ml, 15 ml, 20 ml and 25 ml.